Grouped-Housed Feeding Systems How To Get It Right!

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Group Housing Facilities

- New designs
- Remodeled facilities
- Outdoors

Group Housing Challenges

- Ventilation
- Bedding
- Space availability
- Feeding systems

Group Housing & Feeding

- Gang feeders
- Automated feeders
- Ad-lib acidified

Gang Feeders

- Inexpensive
- Hygiene issues?
- Not ad-lib

Automatic Feeders

- Computerized-data
- Expensive
- Maintenance
- Not always ad-lib

Acidified Ad-lib Systems

- Basic or sophisticated.
- Milk replacer
- Whole milk (pasteurized or not)
- Chemical pasteurization (acid)

Table 1. The pH Scale: Some Examples

pH Value	H^+ Concentration Relative to Pure Water	Example
0	10 000 000	battery acid
1	1 000 000	sulfuric acid
2	100 000	lemon juice, vinegar
3	10 000	orange juice, soda
4	1 000	tomato juice, acid rain
5	100	black coffee, bananas
6	10	urine, milk
7	1	pure water
8	0.1	sea water, eggs
9	0.01	baking soda
10	0.001	Great Salt Lake, milk of magnesia
11	0.000 1	ammonia solution
12	0.000 01	soapy water
13	0.000 001	bleach, oven cleaner
14	0.000 000 1	liquid drain cleaner

Group housing & feeding

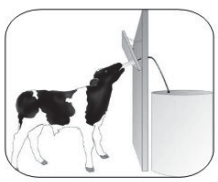

Figure 1. Courtesy Valio Dairy, Finland

Source: N. Anderson

Group housing & ad-lib feeding

Group housing & ad-lib feeding

A seasonal set-up for acidified whole milk

Group housing & ad-lib feeding

Facility designed for grouped housing

Group housing & ad-lib feeding

Group housing & ad-lib feeding

Group housing & ad-lib feeding

Ad-lib & Group Housing Research Summaries

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Overview

- Late spring/summer 2011
- Three collaborating dairy farms (Lewis & Jefferson Counties)
- Objectives:
  1. Group vs. individual housing with ad-lib feeding.
  2. Citric vs. formic acid as a preservative for milk replacer.

Group vs. Individual

- Pasteurized/formic acid acidified whole milk
- Ad-lib feeding
- Group housing (8 calves/pen, 3 nipples/pen)
- Individual housing (clusters of 8- 4x8 pens with solid sides, 1 nipple/calf)
- Alternating group and individual pen clusters within same barn.

Group vs. Individual Pens

	Group (n=40)	Individual (n=32)	p-value
ADG (lbs.) @ 50 days	1.51[a]	1.32[b]	0.01
Serum Total Protein	5.9[a]	5.8[a]	0.61
Birth weight (lbs.)	88.3[a]	89.4[a]	0.66

Preliminary results

Disease Events

Event	Group (n=40)	Individual (n=32)
Scours	0	0
Pneumonia	1	0
Other	0	0
Total disease events	1	0

Conclusions

- No apparent detrimental effects of group housing as compared to individual pens given similar nutrition.
- Disease events (scours, pneumonia) were negligible throughout study (1 case of pneumonia).

Citric vs. Formic Acid

- 24/17 Citric acid acidified (commercial) milk replacer vs. 24/17 milk replacer acidified (on-farm) with formic acid.
- pH of 4.2 (Some issues with product pH for ~2 weeks)
- Two facilities.
- Identical feeding management within each farm.

Citric vs. Formic Acid

	Citric acid (n=38)	Formic acid (n=35)	p-value
ADG (lbs.) @ 40 days	0.92[a]	1.14[b]	0.03
Serum Total Protein	5.54[a]	5.39[a]	0.29
Birth weight (lbs.)	88[a]	95[b]	0.01

Preliminary results

Disease Events

Event	Citric acid (n=43)	Formic acid (n=36)
Scours	3 (7%)	0 (0%)
Pneumonia	7 (16.6%)	4 (11%)
Other	4 (9.5%)	0 (0%)
Death	5 (11.6%)	0 (0%)
Total disease/death events	19 (39.6%)	5 (13.8%)

Conclusions

- Statistically higher ADG in formic vs. citric groups.
- Subjectively, no apparent negative effects of citric vs. formic acid for the acidification of milk replacer. (Currently in use)
- Two week period of high pH and following disease make data analysis difficult for citric group.

Acknowledgments

- Food Animal Medicine Experience (FAME) students from Cornell
- Adam Townsend- Cornell DVM '14
- Milk Specialties Company
- Murcrest Farms, LLC
- Moserdale Dairy, LLC
- Beller Farms, LLC
- Ron Kuck- CCE Jefferson County
- Becca Harrison- CCE Summer intern

Practical Group Calf Feeding

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Moserdale Dairy, LLC

- 600 cows
- 60-65 calves on milk
- Milk replacer (24:24)
- 4 separate physical facilities (one specifically designed for calves). Does allow for all-in-all-out.
- 3% pre-weaning mortality
- ADG 1.8-2#/day

Why??

- Grow healthier calves
- Maximize rate of gain
- Reduce labor for feeding

...proper range pH 4.0 - 4.5

...temperature is important

> (75°F)

warm milk + acid = cottage cheese

What about intersuckling?

Questions?